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Leavitt's "Outlines of Botany"¹ follows substantially the general sequence of topics in Gray's *Lessons*, and retains much of what must always be highly valuable in that classic text-book. At the same time so many modifications and additions have been required to meet the needs of high schools to-day that a really new book is the result, and one that is fresh and modern in treatment, broad in scope, yet wisely restricted to parts of the subject appropriate for beginners.

The most radical departure is in the laboratory studies, which in important ways improve upon previous attempts to solve the same pedagogical problems. Instead of being frequent interruptions to the text they are kept in sections by themselves, each preceding the section of text to which it relates. They consist of explicit directions and skillfully worded questions leading the student to intelligent observation of readily obtainable material and to instructive experimentation. In addition to these aids to laboratory work many helpful suggestions to teachers are given in an appendix, while a number of good references for supplementary reading are included for the benefit of both teacher and pupil.

In the text ecological considerations play an effective though subordinate part in accounting for peculiarities in the form and behavior of organs. Primarily, however, the study of the parts of plants is firmly grounded upon their morphology. A considerable number of new figures, all of high excellence, supplement or replace those of the *Lessons*.

The work is sure to be heartily welcomed by a large number of teachers, whether among those who are struggling to make the best of meager equipment and much restricted time, or among those who are more fortunate in their opportunities. Those who use the book cannot fail to be impressed by the fine scientific spirit which animates every page.

F. L. SARGENT.

Garden Beans.² — Few attempts have been made to monograph the garden beans. The work of von Martens, *Die Gartenbohnen*, in 1860 seems to have been the only previous effort in this direction.

¹ Leavitt, Robert Greenleaf, A.M., of the Ames Botanical Laboratory. *Outlines of Botany*, for the High School Laboratory and Classroom (based on Gray's *Lessons in Botany*). Prepared at the request of the Botanical Department of Harvard University. New York, American Book Company. 12mo, 372 pp., 384 figs.

² Irish, H. C. Garden Beans cultivated as Esculents, *Report Missouri Botanical Garden*, vol. xii, pp. 81-165, Pls. XXXVIII-XLVII.

Since that time the varieties of garden beans have greatly increased in Europe and the United States. All of the leading varieties of America and Europe were cultivated at the Missouri Botanical Garden, so that the growth and seed characters were used in the descriptions. The garden beans are grouped under the following genera: *Phaseolus*, *Dolichos*, *Vigna*, *Glycine*, and *Vicia*. The author gives a short account of the origin, uses, methods of culture, with a brief account of *Bruchus obsoletus* and *Colletotrichum lagenarium*, *Uromyces phaseoli*, and *Phytophthora phaseoli*. Three species of the genus *Phaseolus* are described, *P. lunatus*, *P. vulgaris*, and *P. multiflorus*. The greatest number of varieties are listed under *P. vulgaris*. *Dolichos* is represented by *D. lablab* and *D. sesquipedalis*; *Vigna* is represented by *V. catjang*; *Glycine* by *G. hispida*, of which five garden varieties are listed, but this does not by any means comprise all of the varieties, as they are numerous in Japan and China, where the species has long been cultivated. The genus *Vicia* is represented by a single species, *V. faba*.

An excellent feature of the paper is the full citation of the literature of the genus as well as that of the species, no pains having been spared to verify references. The half-tone plates accompanying the paper greatly aid in the botanical study of the garden beans. The excellent keys for garden varieties also help to facilitate the determination of the garden forms. This is one of the most important contributions to horticultural literature in this country. In point of thoroughness it is like his paper on *Capsicum* published a few years ago in one of the earlier reports of the Garden. It is a model of excellence in every way, and it may well serve as a guide for much of the erratic work carried on in this country in listing varieties and describing the same.

The work carried out by the author is one that has long been neglected in this country. Mr. Irish is fortunate in having had at his disposal not only a large amount of material,—and such work can only be undertaken where this is at hand,—but also a good reference library, combined with acute judgment in discriminating between the puzzling garden forms.

L. H. PAMMEL.

Pfeffer's Plant Physiology. — Pfeffer's¹ revision of his *Pflanzenphysiologie* has been so thorough and so time-consuming that only the

¹ Pfeffer, W. *Pflanzenphysiologie. Handbuch der Lehre vom Stoffwechsel und Kraftwechsel in der Pflanze.* 2. Auflage. Leipzig, Engelmann, 1901. Bd. ii. 1. Hälfte.